junction of the lip with the body whorl is beneath the carina, in some cases a short distance below, so that the carina is well marked on the upper whorls, but usually the lip starts from just under the edge of the carina, so that the side of the spire is almost straight, the edge of the carina projecting but very slightly, if at all, beyond the surface of the adjoining whorls; the aperture is decidedly triangular, both extremities being acutely angled, and the lip itself is sharply bent in the centre where the carina appears.

At about the beginning of the fifth whorl, the lip ascends and crosses the carina, and from thence, until it finally disappears altogether, the carina emerges from the upper part of the aperture. This change in the relative position of the lip and carina induces a radical change, not only in the shape of the lip, but of the whole shell. The lip, in order to clear the carina, becomes broadly rounded above and curves in rapidly to meet the body whorl at almost a right angle, forming a deep channelled suture, while the body whorl becomes more ventricose, more or less shouldered, and rapidly increases in size.

For about a whorl after the change takes place, the carina retains its size and position, but after the sixth whorl is reached it gradually diminishes and finally disappears entirely, although the body whorl at all subsequent stages of growth is more or less flattened in its upper part.

With the disappearance of the carina, the shell rapidly assumes its mature form and, with the usual erosion of the apical whorls, becomes the short, stout, heavy specimen customarily seen in collections.

NOTE ON THYSANOPHORA HORNII GABB.

BY HENRY A. PILSBRY.

My attention has been called by Mr. Geo. H. Clapp, of Pittsburg, to the fact that some specimens of *Thys. hornii* show very fine delicate cuticular riblets, more or less uneven at their free edges, and running much more obliquely than the growth-lines, on the surface of the last whorl.[1] This is usually obscured by the thin coat of earth which encrusts the shell, and which it is evidently the function of

[1] This structure has been lucidly described by Dall, Proc. U. S. Nat. Mus. xix, 1896, p. 336.

these riblets to collect. Only a good lens reveals this sculpture, and in specimens which have been collected dead, or cleaned by ordinary methods, it is usually lost. Still, a sufficiently patient examination will generally show some trace of it somewhere on most specimens. *Thys. conspurcatella*, of eastern Mexico, the type of the genus, has similar cuticular riblets, but they are more widely spaced and rather more persistent.

In young and half-grown shells, if perfectly preserved, the riblets bear rather sparsely scattered and long hairs, very delicate and easily rubbed off. I do not know that adults ever retain them; though in several Mexican species such hairs occur on the full-grown shell, and many West Indian species bear close bristles.

The foregoing observations are based upon the entire series of specimens in the collection of Mr. E. H. Ashmun, which he most liberally sent me for examination, and those in the collection of the Academy, including Gabb's types.

The published figures and descriptions of this species leave much to be desired. Gabb gives quite a good description, though none of his specimens show $4\frac{1}{2}$ whorls, as he states. The dimensions, "height .09, greatest diam. .16, smallest diam. .13 inch" = $2\frac{1}{4}$, 4, $3\frac{1}{4}$ mm., are in a rough way accurate. The figures are bad.

Binney's figures (Man. Amer. L. Sh., p. 169, fig. 159) are too narrowly umbilicated, the spire is too conic, and the terminations of the lip do not approach enough. Moreover, they do not indicate the surface-sculpture. The whorls are described as "scarcely convex" whereas they are unusually so; the ends of the peristome are said to be "hardly approaching" while they actually converge so as to nearly meet in adult shells. The dimensions, "greater diam. 4, lesser $3\frac{1}{3}$, height 1 mm." are erroneous, the largest in Gabb's type lot measuring 4 mm. in greatest, 3.5 in least diameter, *with a height of 2.6 mm.* An adult specimen from Jerome, Arizona, collected by Mr. Ashmun, measures: diam. 3.5, alt. 2.3 mm.

Gabb's types were from "Fort Grant, at the junction of the Arivapa and San Pedro rivers," in Graham Co., southeastern Arizona.

Mr. Ashmun has collected specimens in the following localities: Jerome, Patagonia Mts., Crittenden, Prescott and Nogales, Arizona, and Cook's, New Mexico. The International Boundary Commission collected *hornii* at the summit of Hachita Grande Mt., Grant Co., N. M., and Dall mentions seeing the species from the drift of the Yaqui River, Mexico. No other localities are known for the species.